TAWHAI RESERVE - SIX YEARS ON.

ANTHONY HOLCROFT.

In an earlier Journal I described fencing-off in March 1976, a little over 19ha (48 acres) of rough grazing country in the lower foothills of Mt. Oxford. It was our hope that with time, and a little help from us, this small vestige of a vanished forest might return to something approaching its former primeval condition. At an altitude of some 400 metres above sea-level, the property contained 4ha of remnant beech-podocarp forest, and another 3ha or so of swampy river-flat, the balance being in pasture and scattered manuka scrub. When we first took possession, over-grazing had given parts of the bush the look of land in the grip of drought; gorse, blackberry and broom had begun to colonise the grassy hill-slopes where, years ago Nothofagus solandri var solandri (black beech) had been milled for strainer-posts, and thousands of tomato stakes cut from the Leptospermum scoparium (manuka)for despatch to growers in the Avoca and Horotane valleys. But on the eastern-facing slope above the swamp, some of the damper, less-trampled corners of the bush had a secretive character arising from the greater luxuriance, and a few surviving podocarps - Podocarpus dacrydioides (kahikatea) and Dacrydium cupressinum (rimu) - preserved a visual link with the pre-European past. Moreover, the adjacent View Hill Scenic Reserve provided a valuable buffer from neighbouring farm land on our western boundary.

In the six years since stock were excluded, we have watched a number of changes take place, not all of them welcome. Our plan was to allow the main area of bush to recover at its own pace, apart from some hand-weeding of blackberry where it was gaining a stranglehold, and annual spraying with herbicides in the no-man's land along the bush edge. On the outer margins, where the bush is exposed to drying winds, recovery has been comparatively slow. We have

seen a fresh scattering of seedlings all too soon vanish in summer, leaving the ground bare except for the ever-creeping tendrils of blackberry. But during two recent wettish summers (1979 and 1980), a few hardy specimens began to stabilise on these dry sites: Pseudowintera colorata, with a little Lophomyrtus obcordata, Pittosporum tenuifolium, Griselinia littoralis, and the large-leaved lawyer, Rubus cissoides. Deeper in, where several small creeks run through the bush, regeneration of the understory has been spectacular. Here, apart from the numerous beech seedlings, many ferns and shrubby species common to beech forest at this altitude have formed a dense carpet on the forest floor, and there has been some seeding of podocarps as well. In July 1976, we discovered our first kahikatea seedlings - three in all. A year later we were delighted to discover dozens of them growing in a damp spot within a few metres of a parent tree. Few of these have so far reached above the surrounding canopy of myrtle, coprosma and blechnum. Within an area two metres square, I counted recently 20 seedlings up to 11 cm high, nearby were 3 larger specimens between 94 and 145 cm. No doubt a diligent search would have revealed more. In a few years there should be a healthy stand of kahikatea saplings growing in this damp, lower corner of the bush slope. Perhaps one day they may even extend out, as they once did, into the swamp below. Pokaka seedlings, again very small, are also appearing, though we have not yet discovered a single rimu seedling. This is in contrast to the View Hill Scenic Reserve, where there has been considerable rimu regeneration.

Outside the bush we have been engaged in a continuing battle with noxious weeds. I have to admit to mixed feelings. about the spraying of gorse and broom, particularly when I see young beech seedlings growing healthily within a stand of broom retained as shelter, while in an adjacent cleared area, seedlings of similar age stand scorched and dead. But on balance there seems to be no

alternative if we are not to see a hillside tangle of broom and gorse providing a healthy seed-source for the colonisation of nearby farmland. It is the sort of battle, of course, where for every step forward one seems to take two steps back. It is depressing, for example, to see fresh thickets springing up in our footsteps, as it were, year after year. On the other hand we have made some gains here and there, notably on the flattish grassland above the bush-line, where already established thickets of Leptospermum scoparium have seeded prolifically on land recently vacated by gorse and broom. Beneath some of these thickets the scattered beginnings of an understory are beginning to appear: Coprosma sp T. (C. parviflora var. dumosa, Cheesman 1906), Griselinia littoralis (broadleaf), and the ferns Paesia scaberula and Blechnum capense.

One of the more spectacular developments has been the sudden luxuriant uprush of grass as the property entered the herbaceous phase in its cycle of change. In our first summer after the removal of cattle, the lower-growing grasses appeared to be dominant; clover in particular flowered prolifically. But in 1978 the 'roaring season' began in earnest, ryegrass, cocksfoot, yorkshire fog and browntop rippled on the hillslopes, smothering the formerly rich orchid field.

On a visit last year, Brian Molloy confirmed that most of the orchids had disappeared, while on near by land grazed by sheep, a healthy population still flourished. Tall fescue held sway in drier parts of the swamp. There are times of the year when the indigenous rushes seem to shrink and vanish under the plumes of grass. On a warm, windy day in January, as we watched clouds of pollen blowing across the swamp to mingle with a swarm of wild bees, I felt a little like the sorcerer's apprentice, unleashing a tide beyond his control! In the autumn a truce is declared: the grasses die down, and the rushes emerge again, though it is

difficult to decide whether they are successfully holding their own. In would be a pity if they weren't, as it's my opinion that no field or meadow grasses can match the wild beauty of a dense stand of rushes, particularly when lit by the late afternoon light, or when laden with dew on a frosty mid-winter's morning.

Autumn is also the time for cleaning around our spring plantings. Most of our planting so far has been confined to Phormium tenax (flax), grown each year from local seed, and planted densely along the banks of the stream that flows along the edge of the swamp. Where spring flooding has eroded the steeper sections of the bank, we have resorted to cuttings of Salix fragilis (willow) grown as a hedge and topped regularly to prevent them growing out of control. Behind them we have put more flaxes, and on the drier ground, Hebe salicifolia also grown from local seed. (Both are excellent for quick ground cover). So far we have planted about 500 flaxes and 200 hebes. Spring floods are the chief threat to the newly-planted flaxes; once established they grow quickly in the damp sand.

In October of 1981 I planted a seedling of the rare climbing broom, Carmichaelia kirkii, one of three plants given to me by Andrew Purdie of the D.S.I.R. at Lincoln. It was propogated from seed gathered from a vulnerable site in a swamp not far from the reserve. The place chosen for it, on a south facing slope in the bush, was a little drier and more open than where the parent plant was growing, but it was soon entwining itself vigorously around the support provided for it by a small coprosma. About 40 cm high when planted, it produced one delicate flower during its first summer, and when I last measured it in April of this year, it was sending out tendrils in several directions, the longest 140 cm. Two smaller seedlings around 10 cm, were planted early in the autumn in a damp, shaded spot approximating more closely to the original site. Both have survived, one is 25 cm high the other 10 cm.

I have sometimes wished I could be conveyed back in time to this small valley as it was at the time of European settlement. What a paradise it must have been! Yet if I think about it, there is enormous fascination in change itself, as seen in the natural succession of things. One is constantly making discoveries, each, however small, a 'happening': a lone specimen of Clematis australis, discovered in a grassy clearing; a seedling growing under a gorse bush in the swamp, Elaeocarpus hookerianus (pokaka); a green 'sward' of sedge spreading out from the bush edge; a carpet of Griselinia littoralis seedlings beneath Leptospermum scoparium - there is much to see and record, and there will be more, much more as the years pass.

CHECKLIST OF PLANTS.

FERNS

Asplenium bulbiferum ssp. gracillimum
A. flabellifolium.
A. flaccidum ssp. flaccidum
A. richardii
A. terrestre ssp. terrestre
B. capense
B. discolor
B. fluviatile
B. chambersii (=lanaceolatum)
B. minus
B. "procerum" (=latifolia)
B. penna-marina
Grammitis billardieri
Histiopteris incisa
Hymenophyllum multifidum
H. villosum
Hypolepis millefolium
H. rufobarbata
H. tenuifolia
Leptolepia novae-zelandiae
Lycopodium volubile
Ophioglossum coriaceum
Paesia scaberula
Phymatosorus diversifolium
Polystichym vestitum
Pteridium esculentum
Thelypteris pennigera

GRASSES, SEDGES AND RUSHES

Alopecurus geniculatus
Anthoxanthum odoratum
Agrostis stolonifera
Astelia fragrans
Bulbinella angustifolia
Carex breviculmis
C. coriacea
C. flagellifera
C. ovalis
C. secta
C. virgata
Cordyline australis
Dactylis glomeratus
Festuca arundinaceae
F. novae-zelandiae
Glyceria fluitans
Holcus lanatus
Juncus articulatus
J. bufonius
J. gregiflorus
J. tenuis
Luzula picta var pallida
L. rufa
Microlaena arvenacea
Notodanthonia clavata
N. gracilis
Phleum pratense
Phormium tenax
Poa caespitosa
Schoenus pauciflorus
Scirpus sp.
Uncinia angustifolia

ORCHIDS.

Caladenia carnea
C. lyallii
Chiloglottis cornuta
Corybas trilobus
Gastrodia cunninghamii
Microtis unifolia
Prasophyllum colensoi
Pterostylis banksii
P. montana
P. venosa
Thelymitra longifolia
T. pauciflora

OTHER HERBS

Acaena anserinifolia
A. catharticum
Aciphylla subflabellata
Anisotome aromatica
Cardamine debilis
Celmisia gracilenta
C. graminifolia
Centaurium erythraea
Cerastium glomeratum
C. holosteoides
Chrysanthemum leucanthemum
Cirsium arvense
C. vulgare
Cotula dioica
C. squalida
Cynosurus cristatus

Epilobium billardierianium ssp. cinereum
E. chloraefolium
Fragaria vesca
Gnaphalium audax
G. involucratum
G. sphaericum
Helichrysum bellidioides
H. filicaule
Hieracium lachenalii
H. pilosella
Hydrocotyle moschata
H. novae-zelandiae
Hypochaeris radicans
Lageniphora pumila
Leontodon taraxacoides
Linum catharticum
Lotus pedunculatus
Mentha cunninghamii
M. moschata
Mycelis muralis
Myosotis caespitosa
Nertera depressa
N. dichondraefolia
Parentucellia viscosa
Plantago lanceolata
Pratia angulata
Prunella vulgaris
Ranunculus hirtus
R. repens
Raoulia glabra
R. subsericea
Rumex conglomeratus.
R. crispus.
R. obtusifolius
Senecio minimus
Sonchus asper
Stellaria graminea
Taraxacum officinale
Trifolium dubium
T. pratense
T. repens
Vicia sativa
Viola filicaulis
Wahlenbergia gracilis

CREEPERS AND CLIMBERS.

Clematis paniculata
Muehlenbeckia australis
M. complexa.
Parsonsia capsularis
P. heterophylla
Rubus australis
R. cissoides.
R. fruticosus
R. schmidelioides
R. squarrosus

PARASITES.

Alepis flavida
Korthalsella clavata

CONIFERS.

Dacrydium cupressinum
Podocarpus (Dacryocarpus) dacrydioides
Podocarpus spicatus

TREES AND SHRUBS.

Aristotelia serrata
Carmichaelia kirkii
C. robusta
Carpodetus serratus
Cassinia fulvida
Coprosma crassifolia
C. linariifolia
C. lucida
C. microcarpa
C. sp "T" (aff C. parviflora)
C. propinqua
C. rhamnoides (incl. C. polymorpha)
C. rigida
C. rotundifolia
C. propinqua x c. robusta.
Cordyline australis.
Cyathodes fasciculata
C. fraseri
C. juniperina
Cytisus scoparius.
Elaeocarpus hookerianus
Fuchsia excorticata
Gaultheria antipoda
G. crassa
Griselinia littoralis
Hebe salicifolia
Hymenanthera alpina
Leptospermum scoparium
Lophomyrtus obcordata
Melicope simplex
Myrsine australis
M. divaricata
Neomyrtus pedunculata
Nothofagus solandri var solandri
N. solandri var cliffortioides
Olearia arborescens
Pittosporum divaricatum
P. tenuifolium
Pseudowintera colorata
Pseudopanax anomalus
P. arboreus
P. crassifolius
Ribes uva-crispa
Rosa rubiginosa
Schleffera digitata
Sophora microphylla
Ulex europaeus