FOREST REGENERATION AND ITS INFLUENCE ON BIRDLIFE ON A PADDOCK IN MARLBOROUGH SOUNDS

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In 1970 we ("we" = Roger Bray and Gwen Struik, ecologists and nature lovers. Ed.) purchased a bach in Tennyson Inlet adjacent to a vast Beech-Podocarp-Coastal Hardwood forest, for the purpose of studying the dynamics of forest regeneration. Our land was entirely in sheep paddock with only one standing *Carpodetus serratus* (putaputaweta) tree. During the last 28 years the plant cover on our land and most of our neighbours' land has changed from paddock to regenerating forest and only a small amount of paddock remains within the settlement and between it and the mature forest. This change in plant cover and the effect it has had on birdlife is the subject of this paper.

Since 1970, the most important changes in plant cover and, therefore, in food available to birds have been: 1) the regeneration of native forest onto sheep paddocks as the result of reduced grazing; 2) the intensification of regeneration which occurred with fencing the land from sheep, cattle and pigs: 3) the recovery of many plant species as possum numbers have declined; and 4) the planting of native and alien plants which provide bird tucker.

The original woody pioneers onto the paddocks were *Kunzea ericoides* (kanuka), *Leptospermum scoparium* (manuka) and *Ozothamnus leptophylla* (tauhinu), closely followed by putaputaweta, *Aristotelia serrata* (makomako), *Fuchsia excorticata* (kotukutuku), *Coprosma robusta* (karamu), and *C. grandifolia* (raurekau). Today, all these species are still common, except for tauhinu which has largely been shaded out by taller-growing species, mainly kanuka and putaputaweta, which are over 10m high.

Growing up amongst these pioneers and sometimes surpassing them in height are *Coprosma propinqua* (miki miki), *C. propinqua* x *robusta, Pseudopanax arboreus* (five-finger), *Olearia rani* (heketara), *Elaeocarpus dentatus* (hinau), *Weinmannia racemosa* (kamahi), *Pseudopanax crassifolius* (lancewood), *Melicytus ramiflorus* (mahoe), *Myrsine australis* (mapou), *Hedycarya arborea* (porokaiwhiri), one *Phyllocladus trichomanoides* (tanekaha), several *Nothofagus fusca* (red beech), one *Griselinia lucida* (puka), epiphytic on a putaputaweta, *Dacrydium cupressinum* (rimu) and the tree ferns *Dicksonia fibrosa, D. squarrosa* (wheki), *Cyathea dealbata* (ponga) and *C. medullaris* (mamaku).

The ground layer has all of these species, with mahoe, lancewood, karamu, mapou, raurekau, kamahi, porokaiwhiri, ponga, mamaku, and hinau the most abundant. In addition seedlings of *Schefflera digitata* (pate), *Laurelia novae-zelandiae* (pukatea), *Pennantia corymbosa* (kaiko mako) and *Cyathodes fasciculata* (mingimingi) are common. Rimu and *Prumnopitys taxifolia* (matai) are numerous and there are a few *P. ferruginea* (miro) and *Dacrycarpus dacrydioides* (kahikatea) seedlings and saplings. *Pseudowintera axillaris* (horopito), *Pittosporum eugenioides* (tarata), *Beilschmiedia tawa* (tawa), *Myrsine salicina* (toro) and *Rhopalostylis sapida* (nikau) have arrived. Every woody species in the adjacent mature forest is now present on our nearly one acre of land, except *Macropiper excelsum* (kawakawa), *Dysoxylum spectabile* (kohekohe) and *Alectryon excelsus* (titoki) each of which has been prevented from fruiting in the adjacent forest by possum browsing. The rate of woody species arrival over the 28 year period is 1.9 per year.

In 1970, the two most common birds which nested on our land were weka and california quail. There were few blackbirds or thrushes and no english sparrows. Fantails and later

welcome swallows flew over and pigeons did love dives in the sky and sailed over, but never landed. Riroriro came by occasionally and the hedge sparrow could be heard, but rarely seen. Waxeyes were fairly common, especially in autumn, but never in large flocks. Goldfinch, chaffinch and yellow hammer appeared, mainly in the autumn. Harrier flew along the forest margin once or twice a week, near the pigeon rookery. Recently they have started flying into the forest. A kingfisher nested once in a clay bank behind our house. Tuis were rarely seen. Bellbirds came by at odd intervals and tomtits occasionally visited in winter. Shining cuckoos, then as now, were heard, but rarely seen. The evening bird song was feeble, never with tui or bellbird, rarely thrush and blackbird and always wekas calling from family pod to pod, blending into moreporks doing the same.

In 1970, possum browsing in our area had destroyed all but 17 kohekohe saplings and seedlings, nearly every kawakawa and titoki and all but one adult fuchsia and one fivefinger. When the last fuchsia was killed by possums, we started protecting fuchsia seedlings on our land and succeeded in producing a sexually mature tree a few years later, since they grow and mature quickly. This tree is today the parent of at least 30 saplings and trees. It had to be cut, but by this time another fuchsia nearby was mature. This tree was at first visited by bellbirds for nectar and by bellbirds, waxeyes, thrushes and blackbirds (and us) for fruit (konini). Fuchsia begins blooming in August and continues into January. Today this tree produces thousands of flowers and is visited throughout the day by tui and when they leave, the bellbirds nip in. Sometimes up to six tuis, often in groups of three, will be present at the same time.

Fivefinger in 1970 was represented by a single old adult. For years all of the offspring of this adult were killed by possums, but in the late 1970s, a single sapling grew on a bank over the road. The possums rarely ate its flowers and leaves (perhaps they were afraid of falling onto the road). This tree has now produced hundreds of seedlings and a few saplings. It will be only a few more years before some of these saplings are sexually mature and will contribute more fruits for further regeneration and as an important winter food for birds.

Two native plants which have made a big change in bird numbers are *Sophora microphylla* (kowhai) and *Phormium tenax* (harakeke), which have been planted on neighbours' sections over the past 15 years. Kowhai flowers are regularly visited by tuis, and pigeons eat large amounts of flowers, leaves and shoots, especially during courting, which often occurs in the kowhai. Once, when the entire crop of pigeon young were killed (by bad weather?) all the pigeons from our rookery gathered on one kowhai to re-establish mating bonds. Tuis (and us) regularly suck the nectar out of harakeke flowers, and a neighbour puts out sugar water to attract tuis. The most important berry crops for birds are the coprosmas (*C. robusta, grandifolia, propinqua* and *propinqua* x *robusta*), which are often saved for winter feed. The other major fruit is mahoe, eaten by smaller birds, especially waxeyes. They get tipsy when the blue mahoe fruit ferment. *Solanum laciniatum* (poroporo) and pate have become common only in the last five years and their increasingly wide occurrence is because of the spread of fruits eaten by birds.

Two alien plants have notably increased bird numbers; a large hedge and a few single trees of tree lucerne and a hedge of *Buddleia.* Both are browsed by pigeons including birds from nearby bays at the head of Tennyson Inlet. Flocks of over 30 birds will feed together and, on dispersing, their flight paths tell their home origin. Many other plants in residents' gardens are fed upon by birds and non-violent efforts are made by some people to discourage their feeding.

In the regeneration which has occurred on the sheep paddocks since 1970, bird droppings containing forest tree seedlings have played a major role. We are studying the distribution of seedlings and saplings under different cover tree species. Gymnosperm propagules, for example, are carried mainly by pigeons partial to perching in putaputaweta.

The birds in our area today have changed in both numbers of individuals and species. Weka numbers are about the same, but their ability to harvest and vandalise our garden has grown greatly. California quail have nearly disappeared; some years there are none. Bellbirds have greatly increased as a result of feeding on fuchsia flowers and fruit and on coprosma and other berries. Pigeon numbers in the local rookery have increased to around 16, perhaps due to feeding on kowhai, tree lucerne, buddleia, and our garden, especially on the leaves, flowers and stems of apple and plum and on garden plants not protected in cages. Blackbirds, and especially thrushes have increased - mainly due to eating the increased number of native tree fruits, especially various coprosmas, fuchsia, makomako and fivefinger. English sparrows are common. communal nests of up to 12 individuals occur in the dense foliage of lancewood. Fantail and rironiro numbers are about the same, but tomtits are more rare, as are visits by goldfinch, chaffinch and yellow hammer. Waxeye numbers have greatly increased in response to the increased numbers of coprosma and mahoe fruits and garden plants especially tomatoes and kiwifruit. They removed, or damaged about 20% of our kiwifruit crop one evening before we were aware that upwards of 100 birds were in the flock. Hedge sparrow numbers seem about the same. Harrier flights are more frequent now, and they spend more time hunting in the area, perhaps the result of increased bird numbers. A falcon has flown by twice in the past year. The welcome swallow is more frequently seen and the unwelcome spurwing plover is now heard, including at night.

Tuis are now permanent residents with seven or eight family units. Some of these include three adults; we presume the third one is a bachelor male. The tuis nest all around us and protect their nest area by dive bombing, even in winter. In the evening they call to one another and some are still calling when the first star appears. In the spring, every male tui has his singing perch - some try to control several perches. Tuis nested in the top of a 10 m high kanuka behind our bach in spring 1997. They constantly harassed us if we walked on the path below this nest. The nest was blown away in a wind storm. The evening bird song is now a full-throated blend of thrush and blackbird, weka and tui and it lasts much longer than in 1970. Some mornings the tuis, and the bellbirds when they are around, almost approach a dawn chorus worthy of recording.

To have a fuchsia tree blooming for half a year and visited daily and hourly by tuis and bellbirds who always give a hello note and sometimes sing, is for me a never ending joy. I notice that tuis and bellbirds are more common in Nelson city now. Tuis nest on the outskirts and can be seen at any time of year. I suspect that they could survive in even larger cities. They are fierce (nasty!) birds and their habit of nesting in high, swaying trees makes them less vulnerable to cats. If sections in Christchurch were planted with native fuchsias, kowhai, a few harakeke and coprosmas, makomako, etc., as space permitted, tuis and bellbirds would appear and eventually, at least tuis, would nest. Kowhai and coprosmas would attract pigeons, fleshy fruits of other plants would be brought in by the birds, and the avian and plant boundaries of Dean's Bush would greatly expand.