AN ISLAND FOREST—NEW BEGINNINGS

TERRY HATCH

Joy Nurseries
RD2, Pukekohe

During the late 1970s I became involved with the New Zealand Wildlife Service as a volunteer on Little Barrier Island in the cat eradication campaign. After the cats were finally exterminated from the island there was a period of rare native bird liberation on this and other safe islands around New Zealand's shores. Being involved in these expeditions over many years I had the chance to study the flora and fauna of a number of our northern islands. One of the areas, the Mercury Island group, was of special interest to me. I was part of a study of the saddleback, (a native bird), along with doing seed identification in faeces. All the Mercury island group have been extensively modified by human occupation and the introduction of feral (wild or untamed) animals. The plant life of these ''cultivated'' places is highly modified due to species being destroyed by fire, or unable to regenerate owing to the predation of seeds and seedlings by rabbits and rats. Often there will be only one or very few individual trees of great age perhaps fruiting in vast quantities and no resulting young plants. We have found fruits of rewarewa (*Knightia excelsa*) eaten on the tree by *Rattus rattus* (ship rat) to a height of 15m. Such rats will also eat all the buds from *Meryta sinclairii* (puka) and kill them.

With this background of interest in the islands I was recommended as a consultant to the owners of an island in the Mercury group who had a problem of erosion along one side of an airstrip and had been unable to establish any tree cover for the area. This island has had a long history and was possibly one of the first areas in New Zealand to feel the effect of human occupation. It has a very mild climate suitable for the cultivation of plants such as the kumara. Extensive walled gardens are still visible there today. There have been vast fires and most of the original bush has disappeared leaving a few pockets of trees among very large areas of grazed farming land.

Aspects of this island which had to be taken into account so that we could succeed in growing trees were varied. Firstly, the climate, while mild is very dry, being in the rain shadow of a large range of hills on the mainland. It often does not rain all summer (September-May) or, if it does rain, it is very little and soon evaporates. Secondly, there is a problem of gorse (*Ulex europaeus*). Until a few years ago the island was farmed with matches: the gorse and *Leptospermum* were burned and the resulting regrowth grazed. Soil disturbance results in thickets of gorse seedlings overnight;

2,4,5-T sprays are used to control these, although injuring and killing many of the large *Metrosideros* plants. Thirdly, it is very hard to tell cattle and sheep not to eat the trees, so that costly fences and cages must be erected. These fortifications are not always successful and many a young tree has ended up as a steak or as wool. Goats (now eradicated) must have eaten out many a rare plant growing on the steep cliffs.

Other factors to be taken into account are the preservation of archaeological sites and keeping the plantings in tune with the island flora, e.g. avoidance of exotics that will become weeds spread by seed. A plant that comes to mind is the fan palm (*Chamaerops* sp.) which was planted on Little Barrier Island many years ago. A few of these palms planted earlier on the island were pulled out as they could have eventually spread to other islands of the group with the aid of pigeons or parrots.

For the main planting, which was in very sticky subsoil taken from the airstrip, I had to plant small growing trees and shrubs (under 4m tall for air regulations). The area was fenced off but the first difficulty I ran into was the lack of suitable material. Most nurseries had large size plants but would not part with the larger tube lines that I knew to be suitable for the job. However, I did manage to collect enough *Pittosporum, Coprosma,* and a few flax, in addition to some large *Metrosideros* for the harbour area. These plants were packed and sent to Whitianga and duly sailed for the island. We followed by plane with a box of food, fertiliser, and spades. The planting was executed in foul weather, hurricane force winds, freezing rain, and gluelike clay. The main lesson was that the small plants chosen were the correct solution to the drought problem as the grass grew over them and protected them for the first season. Though I received considerable flack for the "untidy appearance" of the area, and still do, the long growth helps suppress gorse seed germination.

Over the intervening years the original project has grown and we are now planting up other desirable sites, the majority of plant material coming from the area. Seed and cuttings are collected and grown in Root-Trainers in the case of trees and shrubs. Flax (*Phormium tenax*) is contract-grown in the open ground. Problems which do not exist on the mainland have had to be overcome, e.g. transporting the plants to the island to coincide with farming operations and as near to planting time as possible as the cartons quickly rot and soggy boxes are hard to cope with on cliff side tracks. Organising food for 10 days or so for the team of 6 who are often away working on other island projects is also a big problem.

While this ongoing planting has been a challenge for our small nursery it is very gratifying to see the earlier plantings well on their way. Trees are now reaching 2 to 3m tall and starting to spread from

the coastal bush area. Possibly these will be living seed banks for the day when rats and cats are eradicated and rare birds can be reintroduced. My commitment to the conservation of our unique and beautiful land will have been in its small way fulfilled.

SEED PROPAGATING TIPS ON SELECTED SPECIES

Propagation of plants in our project has been mainly by seed. Some of the species we used are:

Planchonella novo-zelandica (tawapou) A medium-sized tree with dark shining leaves and colourful fruits The fruit is usually eaten by native pigeons and parakeets, the hard seed strewn beneath the tree Collected in May (autumn), the seed is washed, sown on the surface in planter bags, 50 seeds per bag, and set in a dark area of the shade house until germination after about 3 months They are potted the following winter and grown on for a further 2 years

Nestegis apetala (coastal maire) A medium sized tree with very glossy leaves and small pale purple fruits These can be collected in mid-May from the tree and the pulp removed Seed is sown and just covered then kept at 20 °C until mid-spring Most seeds will have germinated and will be large enough to tube up and grown on for 2 years

Coprosma robusta and ***C. macrocarpa*** These are small trees or shrubs with red fruits Seed is collected from plants in April, or from bird droppings in roost boxes, cleaned of pulp and sown in trays Germination occurs in 2 to 6 weeks, and the seedlings potted in spring They are pruned twice in summer and planted the first year Some excellent forms were grown from the "bird seed" and will then be propagated from cuttings

Metrosideros excelsa (pohutukawa) A large tree with red flowers Seed is collected in April from selected trees and sown fresh on the surface Germination occurs in a few days The small seedlings are pricked out in spring and either planted the first year or kept for growing on in planter bags

Griselinia lucida A medium sized tree with large glossy leaves, fruits are collected in April—May and the green pulp removed Sown on the surface, seed germination occurs in 5 to 20 days Seedlings are pricked out in spring and grown on for 2 years

Pittosporum (3 species) Seed pods are collected in May, mashed up in a bucket with petrol until the gum has dissolved, then washed in washing-up liquid with the rubbish floated off Seed is then sown in trays just covered Germination occurs in 1 to 5 months The seedlings are usually large enough to plant out the first season

Beilschmiedia tarairi A large tree with dark blue drupes, seed is collected in April and June, mainly from mounds of droppings from native pigeons Many hundreds of the large seeds can be collected from one mound, the odour being highly "aromatic" to say the least The seeds exude masses of "jelly" which appears to keep the young germinating root and shoot moist until the seedling takes hold of the soil Year-old trees are large enough to be planted out or grown on for a further year