

2.14 PLOT 16: NIKAU BUSH SCENIC RESERVE

This is the stronghold of nikau on the island. Its forest has regenerated spectacularly following animal control - but not everywhere. Unless more concerted control is done, the future of this reserve's forests will be a chequered one.

Although in 1995 we had identified gaps in the coverage of vegetation monitoring plots on Chatham Island (Walls and Baird 1995b), we only had time this expedition to address one of those gaps. We set up a new 20m x 20m plot in Nikau Bush Scenic Reserve to follow the dynamics of nikau (*Rhopalostylis* "Chathams") treeland or woodland, and to provide a comparison with the same sort of situation on Pitt Island.

The plot is in the eastern portion of the reserve, on a gentle east-facing slope. It is within a woodland of tall elegant nikau palms beneath which are smaller trees and saplings of karamu and kopi. The ground is covered with rank pasture and patches of bracken laced with blackberry.

The reserve is another example of a protected area that has inadequate fencing, as sheep and goats periodically get in and graze the plot site. Possums are common there too, even though there are bait stations to control them. Nevertheless, in parts of the reserve that have fairly closed-canopied forest, regeneration of forest trees, including nikau, is truly spectacular. Many saplings are now above person-height, and appear to be rushing skywards. In the plot there are few saplings, but there are numerous nikau seedlings poised to honour the efforts of their parents and form new forests - so long as the browsing animals don't get them.

Better fence maintenance and possum control are clear management priorities for this reserve. Otherwise, what looks now like a success story will produce a peculiarly fragmented vegetation in which there are chunks out of both the coverage and the understorey tiers.

2.15 THE PLOT CONVERSION

As we converted the plots from their original 25m x 25m size to the 20m x 20m NZ Forest Service standard, we thought about the comparison. The following table is a breakdown of various features of each.

	25m x 25m	20m x 20m
Size:	Larger (625 square metres)	Smaller (400 square metres)
Speed of measurement:	A little slower	A little faster
Tree measurement:	>1.5m tall, >10cm diam.	All stems >3cm diam.
Sapling measurement:	>30cm tall, <10cm diam., counted in two height classes: 30cm-1.5m tall, >1.5m tall (includes tree ferns & lianes)	>1.35m tall, >3cm diam. (includes tree ferns & lianes)
Understorey, ground cover measurement:	<30cm tall, includes ferns, seedlings, shrubs, grasses, herbs litter, rocks, logs, mosses, etc. - assessed as percentage cover	Measured by 24 subplots: woody species in various height classes (16-45cm, 46-75cm, 76-105cm, 106-135cm, >135cm); same components as for 25m x 25m plot
Data generated:	Good numerical data for trees and saplings, semi-quantitative data for ground cover; easy to visualise ecologically	Good numerical data for all tiers, but focus on wood volumes and hard to visualise ecologically
Ecological impact on site:	Very little (minimal pegs, tags, strings, tapes, trampling)	Considerable (many pegs, tags, strings and tapes, and a fair bit of trampling)

Both techniques do the job of following vegetation changes on the Chathams well. They each have different strengths, weaknesses and idiosyncrasies. Now the plots are set up for the 20m x 20m standard, that is how they should be run in future. However, the 25m x 25m baseline already established for most of them is still valuable for monitoring trees, since it provides a substantially larger sample.

3. The photopoints

Photographs were taken at each plot, for comparison with those taken in 1990. Thereby another body of visual evidence of vegetation condition and change in a range of situations was gathered. Photopoints set up in 1990 (Walls and Scheele 1990) were visited where possible. We ran out of time to get to them all, and decided to abandon a few. We also established some new ones.

The following descriptions of the photopoints go according to the 1990 sequence.

3.1 RANGAIKA SCENIC RESERVE, 26/4/96

- a) Along the reserve fenceline, looking inland from its seaward tie off (grid reference: Sheet 2/552432), and scanning the slope below Plot 4. This photopoint demonstrates a massive increase in flax within the retired rank pasture of the reserve (Figure 15). It also shows a substantial increase in height of the regenerating tarahinau saplings, and some recruitment of korokio and keketerehe, inside the reserve fence. In contrast, trees and shrubs have deteriorated in condition, and there is no flax, in the adjacent farmland. The negative impact of domestic stock on native vegetation and its rapid recovery when they are excluded are thereby graphically illustrated.
- b) Along the same fenceline, but about 700m inland, where it takes a right-angle kink (Sheet 2/550439). Photos were taken along each wing of the fence, standing atop the big strainer post at the corner. They show an even more dramatic contrast between the vegetation inside and outside the reserve. Inside, regenerating swamp heath, aster and bamboo rush form a dense thicket. Outside, where there are domestic stock, what little of that kind of vegetation that was there in 1990 has deteriorated further in condition.
- c) From the same fenceline, about 200m east of b) (Sheet 2/552440). Photos show that since 1990 there has been good regeneration of *Myrsine coxii*, bamboo rush, aster, swamp heath, hoho and korokio inside the reserve. Outside it, the same deterioration as in b) is evident.

3.2 HAPUPU COAST (SHEET 1/ 646749)

Not visited.

3.3 OCEAN MAIL, 29/4/96

- a) Sandhill top, 1km NE of Lake Wharemanu (Sheet 1/ 577782). Not visited.
- b) Roadside through reserve 1km east of a) (Sheet 1/588783). In 1990, apparently dead skeletons of kopi trees stood as a grim reminder of the former luxuriant forests on the site. Stock were excluded by fencing in 1991 and a miraculous thing occurred. By March 1993, many of the "dead" trees, and even cut stumps, had begun putting out green foliage: their root systems were still alive. However, the great fire of November 1994 took out the fences, and stock moved back in. By March 1996, the scene looked just as bleak as it did in 1990, except more trees had crum-

bled and fallen. Unless the reserve fences are restored soon, the only way to get forest back on this site will be to plant it.

- c) About 400m east of b), from a small knoll on the south side of the road (Sheet 1/592781). This is a new photopoint, at the tagged akeake tree that is used as a reference point for relocation of Plots 13, 14 and 15. It is a 180° panorama that takes in both the skeleton kopi of b) and the burnt wetland the plots are in.

3.4 TAUPEKA-WHARO (SHEET 1/517784)

Not visited.

3.5 NORTH ROAD - HAPUPU ROAD JUNCTION (SHEET 1/648763)

Not visited.

3.6 WAITANGI WEST PINGAO (SHEET 1/252746)

Not visited.

3.7 TENNANTS LAKE, AKE-RAUTINI (SHEET 1/438692,440691,442691)

Briefly visited, but not photographed because of unsuitable conditions. The ake-rautini appeared to be holding its own.

3.8 HENGA SCENIC RESERVE, DUNES 19/4/96

This panoramic photopoint (Sheet 1/453665) is very near Plot 10 and takes it in. It shows significant loss of and damage to trees standing in the path of westerly winds. To counter that, it also shows regeneration of tree species through rank grassland, marram grass and shrubland, and an increase in shrubs, pohuehue and rushes at the expense of marram grass and rank pasture. Therefore this landscape, once forested then laid bare, is returning to forest.

3.9 BIG BUSH, KOWHAI ON LAGOON SHORE, 28/4/96

There are some large trees of kowhai (*Sophora microphylla*) on the limestone scarp on the shore of Te Whanga Lagoon at the south-eastern end of Big Bush (Sheet 1/488625). In 1990 they looked healthy, although domestic stock

were ensuring they produced no progeny. By April 1996 their situation has begun to look precarious: there has been significant death and dieback in the old trees, but despite the exclusion of stock there is still no kowhai regeneration. There is still time, because kowhai seeds are very long-lived, but some intervention such as planting may be required in future if kowhai is to remain there.

3.10 RAANA TUUTA'S RESERVE, TENNANTS LAKE, 18/4/96

There is a patch of bush, dominated by kopi, at the north end of Tennants Lake. The Port Hutt Road bisects it. On the southern side of the road the trees are heavily browsed beneath by domestic stock, and there are few if any seedlings or saplings. That is how the northern side, Raana Tuuta's, also was in 1990. Some photos were taken then (Sheet 1/442698) and repeated in April 1996. The change has been dramatic. Since being formally protected, and fenced in about 1993, the trees have sent out rampant epicormic growths, now up to 2m tall, and there has been recruitment of a wealth of seedlings of kopi, mahoe, karamu and hoho everywhere except where the rank grass sward is densest (Figure 17). So, even though there are many possums, and they and the wind are working on the tree canopies, this land, which looked very sad only a few years ago, is rapidly regaining a healthy forest cover. This site graphically illustrates, from the comfort of a vehicle, the value of protective fencing to Chatham Islands forest recovery. It lends itself to further study using photopoints, in a range of microsites.

3.11 NIKAU BUSH SCENIC RESERVE, 28/4/96

In March 1993, the regeneration of nikau and other trees was photographed about 50m NW of where Plot 16 has now been sited (Sheet 1/442764). The same scene was photographed again in April 1996. In 1993, Sue Scheele stood above most of the seedlings and saplings. In 1996, Amanda Baird (about the same height as Sue) was dwarfed by those same plants, illustrating the very rapid growth rates of the regenerating vegetation (Figure 20). It will be necessary to obtain an outstandingly tall person to act as a visible scale in 1999!

4. Conclusions and recommendations

4.1 CONDITION AND TREND OF THE VEGETATION AT THE PLOT AND PHOTOPPOINT SITES

The plots and photopoints tell the same story. Wherever forests on Chatham Island have been well fenced to exclude domestic stock and wandering feral

cattle and sheep, there has been a rapid response of forest floor regeneration. However, this recovery has been undermined in many places through animal control not being adequately maintained. The future condition and trend of Chatham Island vegetation is therefore profoundly dependent on the effectiveness of the animal control regime.

These results exactly parallel those from similar work on Pitt Island.

4.2 ADEQUACY OF COVERAGE OF THE EXISTING VEGETATION MONITORING SITES

The existing plots and photopoints cover most situations on Chatham Island where vegetation monitoring is important. Three additional plots would be valuable to complement the picture in the north:

- Chudleigh Scenic Reserve, where forest recovery seems to be faltering;
- Tioriori wetland, where the trends and management needs are not clear;
- Taupeka, where cranberry ("Chilean guava"), *Vaccinium macrocarpon*, is spreading.

4.3 IMPLICATIONS FOR CONSERVATION MANAGEMENT

There is a clear need for better animal control on Chatham Island if indigenous forest is to recover - or even remain - in the long term. In most places this means provision of adequate fences to exclude domestic stock, and a regular programme of inspection and maintenance.

Also needed as a complement are ongoing control of:

- possums, feral pigs, feral cattle, goats.

Putting in place a sustained properly-resourced programme for fencing, fence maintenance and feral animal control is the most significant next step that could be taken for conservation on Chatham Island, and the island group as a whole.

5. Acknowledgements

Sue Scheele was one half of the team that established the plots and photopoints on Chatham Island in 1990. Her enthusiasm and dedication were essential then, as was her purely voluntary labour. Although disappointed not to be able to be there for the 1996 remeasurement, she fully supported the work, in all sorts of ways.

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6. References

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Note: *Dodonaea viscosa*, called ake-rautini in the *Chathams*, is commonly known as akeake in New Zealand. On the Chathams, akeake refers to the quite unrelated tree *Olearia traversii*.



FIGURE 13
Plot 1, "Abyssinia",
Tuku Nature
Reserve. A
sequence of forest
floor regeneration
taken at three-year
intervals: 1990
(top), 1993 (middle),
1996 (bottom).
Appearances are
deceiving though,
because cattle and
pigs continue to
impede the process.